daylighted interior. Some of the skylights are on louvers, as described before, so air is constantly vented out the roof skylights. Replacement air comes in vents in the box windows and through low wall vents. A wood stove adds to the comfort level on cold winter evenings. Even on cloudy days (which is most of the time), the power of the sun is amazing.

The third building is the office of a Doctor in Hilo. It is located at the intersection of Laukapu and Lanikaula streets, a residential area. The building was designed to fit into the neighborhood, architecturally.The doctor did not want the "sick building syndrome" often associated with mechanical air conditioning. He also felt that it would not be good for patients to move from a hot climate into a cold building, and then back out into the heat. In addition, he was aware of the benefits of working in a daylighted environment rather than under electric lights.

Engineers warned the doctor that the building would be unbearably hot and that humidity would cause his electronic equipment to fail "during the first year". It has now been four years since the building was completed. The palms and native shade trees have grown, shading particularly the west side. The windows on that side also are double glazing with an e- layer, keeping out the heat of the afternoon sun.

The doctor and his staff are happy. Even his exam rooms are daylighted. The number of patients has increased. Computers, printers and all of the diagnostic electronic equipment is working. Paper for the Xerox machine sits out on an open shelf. This doctor's costs for electricity are $500 a month less than for a similar sized building nearby for another physician, who has full air-conditioning.

Summary: Passive Solar Design Benefits

* The cost of electricity can be reduced by at least 30 percent and often as much as 80 percent compared with nearby buildings designed outside of this design discipline.

* Solar techniques described here also result in reduced operating costs. Air conditioning, besides using a lot of electricity, is expensive to install, operate and maintain. If not well maintained it may result in the "sick building" syndrome.

* Skylights used to activate air movement can also reduce, or eliminate the need for electrical lighting during daylight hours.

*Security concerns are more easily met than with designs which require open windows for fresh air. There are still windows, but if they don't open, screens can be eliminated. This offers better views and less upkeep. Dust, heat, and salt air can also be controlled.